English

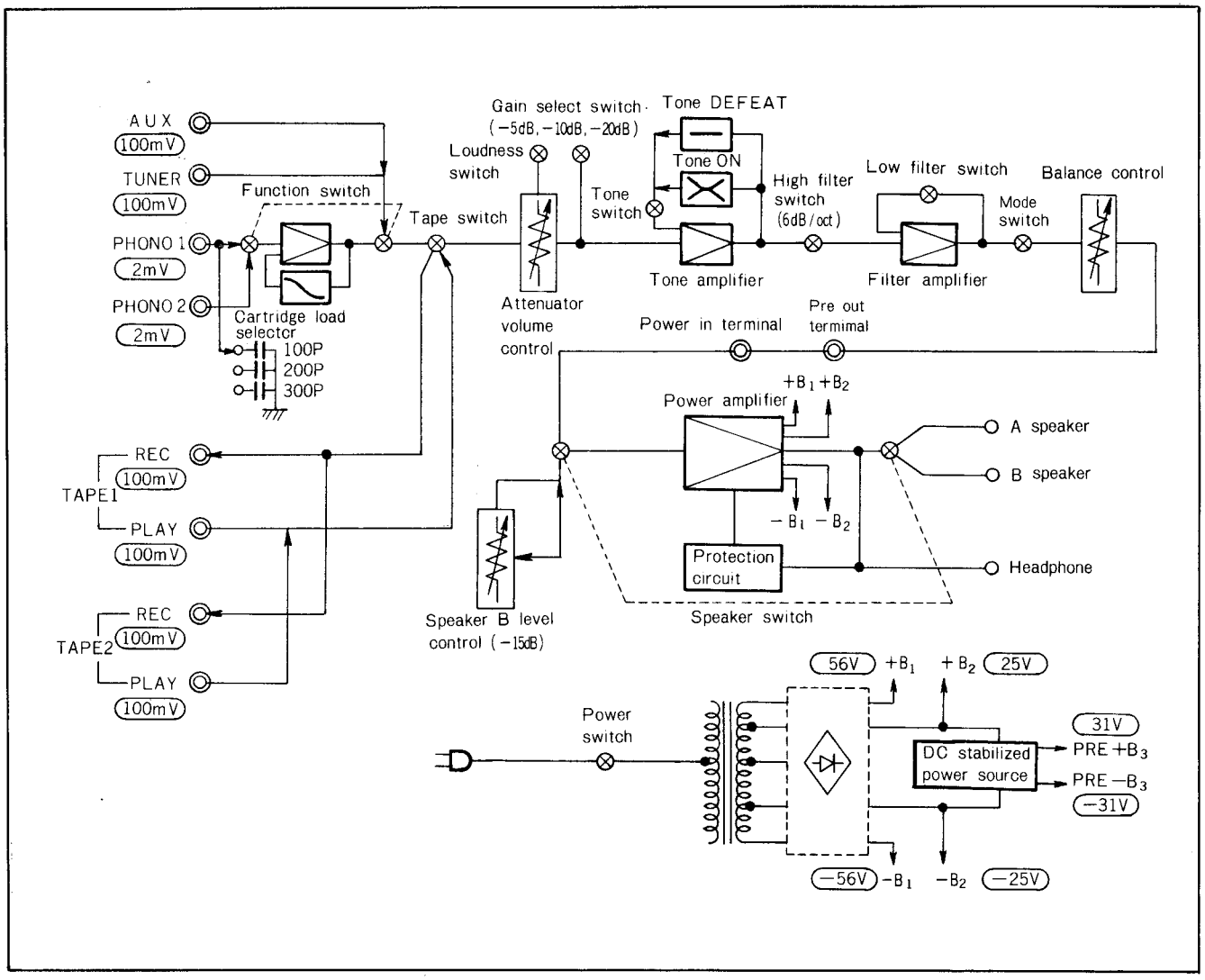
HA-5300

STEREO AMPLIFIER

INSTRUCTION MANUAL

KEY TO ILLUSTRATIONS

① SPEAKERS switch
② SPEAKERS B LEVEL control
③ BASS control
④ TREBLE control
⑤ TAPE switch
⑥ FUNCTION switch
⑦ Volume control (LEVEL ATTENUATOR)
⑧ Pilot lamp
⑨ POWER switch
⑩ PHONES jack
⑪ LOW FILTER switch
⑫ TONE switch
⑬ HIGH FILTER switch
⑭ MODE switch
⑮ BALANCE control
⑯ GAIN SELECT switches
⑰ LOUDNESS switch
⑱ Ground terminal (GND)
⑲ PHONO 1 CARTRIDGE LOAD selector
⑳ PHONO 1 input terminals
㉑ PHONO 2 input terminals
㉒ TUNER input terminals
㉓ AUX input terminals
㉔ TAPE 1 PLAY terminals
㉕ TAPE 1 REC terminals
㉖ TAPE 2 PLAY terminals
㉗ TAPE 2 REC terminals
㉘ SPEAKERS terminals
㉙ Power supply cord
㉚ VOLTAGE SELECTOR
㉛ PRE OUT terminals
㉜ POWER IN terminals



Printed in Japan (H)

INSTALLATION

Please choose a place that satisfies the following conditions when installing the HA-5300.
1. A place free from direct sunlight and heat from a stove, etc.
2. Since the HA-5300 incorporates a large output power amplifier, choose a well ventilated, moisture-free place.
3. Install on a stable and vibration-free surface.

FEATURES

1. Dynaharmony system perfectly matched for music reproduction

The amplifier features four power supplies (±56 V high voltage and ±25 V low voltage power supplies). High-speed switching occurs between the power supplies in accordance with the peak level of the music signal. This makes for a sufficient margin with respect to the dynamic range of music signals and also for an extremely high level of efficiency.

2. Current mirror circuit in the Class A driver circuit

The Class A driver circuit, which is the very heart of the main amplifier, features a current mirror circuit for push-pull drive in the power stage and for a low distortion factor.

3. 32-contact attenuator volume control for an accurately adjusted level control

With this control, there is very little deviation between the left and right channels and the attenuation can be controlled accurately.

4. Independent 3-stage adding gain selector for extended fine setting range

The −5 dB, −10 dB and −20 dB gain selectors each feature an independent adding system and so 7 different attenuation variations can be obtained between −5 dB and −35 dB, permitting use over a wide range. Also, the combination of the attenuator volume control and the loudness switch makes for an ideal loudness response, and it serves for presetting, too.

5. 3-stage direct-coupled equalizer amplifier composed of 2 FETs and 2 transistors with differential amplifier for first stage

The 3-stage equalizer amplifier which employs a differential amplifier for the first stage yields a low distortion and a high signal-to-noise ratio and features plenty to spare with a 350 mVrms (1 kHz, 0.3%) maximum allowable input.

6. Easy listening comparison with speaker level control

The level of the B speaker system can be controlled on the front panel which means that it is easy to bring that level in line with the level of the A speaker system for simple listening comparison.

7. PHONO input capacitance selector switch

This switch can be used to select the PHONO 1 input capacitance to any of three stages. This means that the peak in the characteristics at the resonance point of the cartridge's high-end frequency (near 20 kHz) can be suppressed and that you can listen to a record with the preferred tone quality.

8. Low filter that reduces hum and rumble in the ultra-low frequencies without impairing the sound quality

The low filter employs a 20 Hz (12 dB/oct.) subsonic filter which helps to eliminate undesirable vibration in the ultra-low frequencies without impairing the sound quality, and which allows the speakers to function always at their best.

9. High filter that effectively cuts out noise produced from scratches on records and high frequency noise during AM and FM reception

The high filter has figures of 8 kHz (6 dB/oct.) so that it effectively cuts out high frequency noise.

10. Tone defeat switch for instant flat characteristics

This switch can be selected in a flash for flat characteristics regardless of the bass and treble controls. When set to 'defeat', the signals do not pass through the tone control circuit.

11. Protective circuitry for safety

The amplifier incorporates electronic protective circuits to protect both the speakers and the power transistors. There is also a muting circuit which helps to reduce shock noise when the power switch is turned on and off.

Power (Mains) Requirements

This unit can be used with a power (mains) voltage of 120 V, 220 V or 240 V. Before shipment, it is set for 220 V or 240 V according to the region it is to be sent to. The power (mains) voltage of the unit is marked on the rear panel. When the power (mains) voltage is different, please consult your dealer.

IMPORTANT FOR U.K.:
WARNING: This apparatus must be earthed.
The wires in this mains lead are coloured in accordance with the following code:

Green and Yellow:	EARTH
Blue:	NEUTRAL
Brown:	LIVE

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows. The wire which is coloured GREEN and YELLOW must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol ⏚ or coloured GREEN or GREEN and YELLOW.
The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLACK.
The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.

CONNECTING

1. Connection of Speakers

Two sets of speaker systems (A and B) can be connected to this amplifier. A performance of music can be enjoyed using either both speaker systems or only one of them.
As shown in the figure on the cover page, connect the terminals marked LEFT to the L ch speaker systems. In the same way, connect the terminals marked RIGHT to the R ch speaker systems.

Notes:
(1) As illustrated in the figure on the cover page, the upper terminals are for Ⓐ speakers, and the lower terminals are for Ⓑ speakers. The red terminals are the positive (+) ones, and the black terminals are the negative (−) ones. Make sure to correspond the polarities of the terminals in this amplifier to those of the terminals in each speaker.
(2) When 4 ohm speakers are connected to both A and B, and the SPEAKERS switch is set at A+B, the combined impedance of the speakers is only 2 ohms. Avoid using this arrangement. Be sure to connect speakers of more than 8 ohms when two sets of speakers are to be operated simultaneously.
(3) Turn the SPEAKERS switch ① OFF when only headphones are being used.

2. Connection of Turntable

Connect the output cords of the turntable to the terminals of the amplifier as described below. Each connection is different depending on the kind of cartridges.

(1) Moving magnet cartridges
Connect the output cords of the turntable to the PHONO-1 ⑳ or PHONO-2 ㉑ input terminals.

(2) Moving coil cartridges
Connect to the PHONO-1 ⑳ or PHONO-2 ㉑ input terminals via a matching transformer or head amplifier.

(3) Ceramic or crystal cartridges
Connect to the AUX input terminals ㉓.

Note:
Be sure to connect a grounding wire from the turntable to the GND terminal ⑱ of the amplifier, as shown in the figure on the cover page.
Unless the connection of a grounding wire is done, hum noise will come out from the speakers.

3. Connection of Tape Decks

Since two sets of the record and playback terminals (8 pin-jacks) are provided, two tape deck connections are available at the same time and dubbing or duplicate recordings from one tape deck to the other can be done.

Connections with pin-jacks (TAPE-1, TAPE-2)
Connect the record terminals (LINE IN) of the tape deck to the TAPE-1 ㉕ or TAPE-2 ㉗ REC terminals and the output terminals (LINE OUT) of the tape deck to the TAPE-1 ㉔ or TAPE-2 ㉖ PLAY terminals of the HA-5300.
See the figure on the cover page.

4. Use of the AUX input Jacks

These jacks ㉓ are a set of spare input jacks. They can be connected to cartridge tape players, television sound multiplex tuners, or other forms of signal output.
The upper of the two terminals is the L (left) channel, and the lower is the R (right) channel.

5. Use of the PRE OUT Jacks and the POWER IN Jacks

Use these jacks when using the preamplifier, or power amplifier, separately.

Connecting plug
Use this plug to connect the power amplifier to the preamplifier. It is usually kept connected. However, disconnect it when using the preamplifier or the power amplifier separately. Always turn the switch on your power amplifier to OFF when you intend to use the preamplifier separately before operating the power switch on this amplifier.

HOW TO OPERATE THE AMPLIFIER

Preparation to Enjoy this Amplifier in the Best Condition

Pre-set the controls as follows:

1. Set the Volume control ⑦ to "∞". (Turn this knob fully counterclockwise.)
2. Set the BALANCE control ⑮ to the mid-position where the center click stop point exists.
3. Set the BASS ③ and TREBLE ④ controls to the mid-position ("0" is indicated).
4. Set the LOUDNESS switch ⑰ to OFF (⊓).
5. Set the TAPE switch ⑤ to SOURCE.
6. Set the SPEAKERS switch ① to A or B.

After ensuring you have performed the procedures mentioned above, set the POWER switch ⑨ to ON. This will avoid accidental and careless overloading of the amplifier, speakers, etc.

Broadcast Reception

1. Set the FUNCTION switch ⑥ to TUNER.
2. Operate the tuner to tune the broadcast.
3. Adjust the Volume control ⑦, BASS ③ and TREBLE ④ controls for the listening level and tone quality of your preference.

Record Playing

1. Set the FUNCTION switch ⑥ to PHONO-1 or PHONO-2.
2. Operate the turntable to play the record.
3. Adjust the Volume control ⑦, BASS ③ and TREBLE ④ controls for the listening level and tone quality of your preference.

Using the AUX Input Terminals

When playing equipment to which the AUX input terminals ㉓ are connected, operate as follows:

1. Set the FUNCTION switch ⑥ to AUX.
2. Operate the audio equipment.
3. Adjust the Volume control ⑦, BASS ③ and TREBLE ④ controls for the listening level and tone quality of your preference.

Using Tape Decks

Playback

1. According to the TAPE-1 PLAY terminals ㉔ or TAPE-2 PLAY terminals ㉖ to which the tape deck is connected, set the TAPE switch ⑤ either to TAPE-1 or TAPE-2.
2. Operate the tape deck controls to give playback.
3. Adjust the Volume control ⑦, BASS ③ and TREBLE ④ controls for the listening level and tone quality of your preference.

Note:
Turning the TAPE switch ⑤ to TAPE-1 or TAPE-2 enables tape playback, not depending on the setting of the FUNCTION switch ⑥.

Recording

As shown in the figure, the amplifier's TAPE-1 REC terminals ㉕ or the TAPE-2 REC terminals ㉗ carry a certain, fixed level output from the source selected by the FUNCTION switch ⑥ which, once the tape deck is connected to the appropriate jacks, enables the selected source to be recorded.

The operation is as follows:

1. Set the FUNCTION switch ⑥ for the source to be recorded.
2. Play the selected program source.
3. Adjust the recording level by means of the controls on the tape deck, and commence recording.

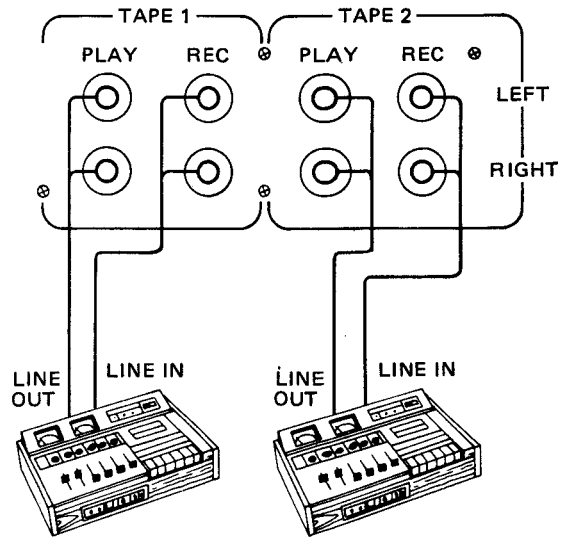
The amplifier's Volume control ⑦, BASS ③ and TREBLE ④ controls are completely inoperative — that is, they have no effect on the recorded sound.

Tape Monitoring

While a recording is being made with a three-head deck, if the TAPE switch ⑤ is turned to TAPE-1 or TAPE-2, the sound being recorded can be monitored through the speaker systems.
In this case, both recording and playback connections must be made.

Duplicating or Tape Editing of Recorded Tapes

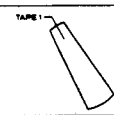
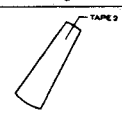
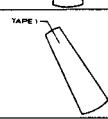
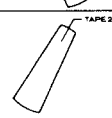
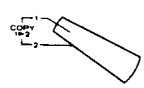
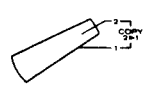
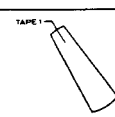
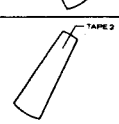
1. Set the TAPE switch ⑤ to 1 ▷ 2 (or 2 ▷ 1).
2. Set the TAPE switch ⑤ to TAPE-2 (or TAPE-1) when monitoring the recorded condition. (This is possible only when using a 3-head tape deck).



Recording an FM broadcast or records on one tape deck while playing back a tape on the other

1. Connect both tape decks to the amplifier.
2. Set the FUNCTION switch ⑥ to PHONO-1 PHONO-2, TUNER or AUX in accordance with the program source you are about to record.
3. Set the TAPE switch ⑤ to the TAPE terminals (TAPE-1 or TAPE-2) to which the playback tape deck is connected.
4. Operate the playback tape deck and start to play back the tape.
5. Adjust the volume to the desired level using the Volume control ⑦.
6. Operate the recording tape deck and start recording. Use the level controls on the tape deck to adjust the recording level.

Operation Checkpoints (for using tape decks)

Objective	FUNCTION switch ⑥	TAPE switch ⑤	Sound from speakers
Playback	Any setting		Sound reproduced from tape deck connected to TAPE-1.
			Sound reproduced from tape deck connected to TAPE-2.
Recording	Set to program source		Sound from program source selected by FUNCTION switch ⑥.
Monitoring recording	Set to program source		Sound being recorded on tape deck-1 can be monitored.
			Sound being recorded on tape deck-2 can be monitored.
Tape dubbing (1 ▷ 2)	Any setting		Sound recorded on tape deck-1.
			Sound being recorded on tape deck-2.
Tape dubbing (2 ▷ 1)	Any setting		Sound recorded on tape deck-2.
			Sound being recorded on tape deck-1.
Recording FM broadcast or records on one tape deck, while playing back tape on the other	Set to program source		Sound recorded on (playback)tape deck-1.
			Sound recorded on (playback) tape deck-2.

How to make the most effective use of the GAIN SELECT switches ⑯ and LOUDNESS switch ⑰

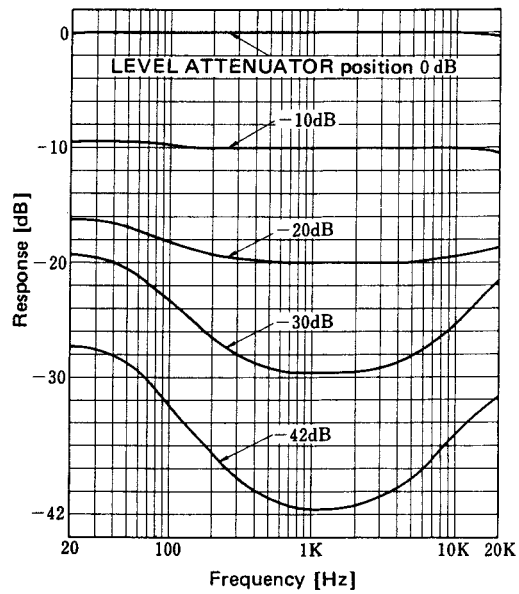
If the LOUDNESS switch ⑰ is depressed and the Volume control ⑦ turned, then the bass and treble responses vary, as is shown in the figure. Therefore, if you set your maximum listening volume with the GAIN SELECT switches ⑯ so that the Volume control ⑦ can be set to its maximum position (extreme right position), you can then proceed to vary the volume with the Volume control ⑦ while maintaining the optimum aural compensation.

Setting the level of the GAIN SELECT switches ⑯

(1) Release all the GAIN SELECT switches ⑯ and the LOUDNESS switch ⑰.
(2) Set the Volume control ⑦ to your maximum listening volume.
(3) Depress the GAIN SELECT switches ⑯ with the nearest value to that of the Volume control's ⑦. (For example, say the Volume control ⑦ is set to -16 dB. The GAIN SELECT switches ⑯ feature an adding system, so all you have to do is depress the -10 dB and -5 dB selectors which give -15 dB when added together.)
(4) Depress the LOUDNESS switch ⑰.

(A 1 kHz attenuation tallies with the level indicated by the LEVEL ATTENUATOR volume control ⑦.)

LOUDNESS CHARACTERISTICS



PHONO 1 CARTRIDGE LOAD selector

This switch can be used to vary the high frequency characteristics by selecting the capacitance of the capacitors (100, 200, 300 pF) which are connected to the PHONO 1 input.

Every cartridge has a resonance frequency, but most of them are designed so that the resonance point lies beyond the audio frequency range.

Nevertheless, some cartridges have a resonance point near 20 kHz, and since the treble characteristics develop a peak, this peak is sometimes unpleasant to listen to. In such cases, this sound can be made perfectly acceptable to the ear by selecting the capacity to 200 pF or 300 pF. Select the most suitable position for the sound you find the most pleasing.

If you want the PHONO 1 and PHONO 2 to be subject to the same conditions when you want to compare cartridges, set the PHONO 1 CARTRIDGE LOAD selector ⑲ to 100 pF.

CAUTIONS

1. On the connection of record player and tape deck

Be sure to use a thick shielded cable with low stray capacitance for connection. If a parallel vinyl cord or a thin shielded cable is used, inductive hum may be produced and the high frequency characteristics will deteriorate considerably. Therefore, it is recommended that you use as thick and short cable as possible.

2. Power transistor protection

When the speaker systems (4 ohms) are connected to both the A and B speaker terminals and the speakers switch is set to A+B, and when these speaker terminals are not connected properly, this causes a short, and the power transistor protection circuit is actuated. The sound is then no longer heard through the speakers.

In such a case, set the power switch to OFF, check whether the speakers switch is set to A+B or whether the speaker terminals have been shorted, and wait at least 30 seconds before setting the power switch to ON again.

3. Amplifier heat loss

Since a large output power amplifier is used, the amplifier radiates heat. Although ventilation holes are provided in the upper part of the case and the bottom plate to improve heat transmission, when it is placed in direct sunlight or when anything is placed directly on the amplifier, the ventilation may be deteriorated resulting in malfunction. If the internal temperature rises, the transistors may be damaged. Take care not to block the ventilation holes.

SPECIFICATIONS

Power amplifier

Circuitry	2-stage differential all-stage direct-coupled 4-power supply high-efficiency pure complementay OCL system (Dynaharmony system)
Dynamic power	260 W (IHF 8 ohms)
Output	
RMS power (both channels driven)	60 watts per channel, min. RMS, at 8 ohms from 20 Hz to 20 kHz, with no more than 0.3% total harmonic distortion. 75 W / ch + 75 W / ch (8 ohms, 1 kHz, T.H.D. 0.3%) 85 W / ch + 85 W / ch (4 ohms, 1 kHz, T.H.D. 0.3%)
Power bandwidth	10 Hz - 50 kHz
Total harmonic distortion (1 kHz, 8 ohms load)	0.05% (at rated output)
Intermodulation distortion (60 Hz : 7 kHz = 4:1)	0.05% (at 1/2 rated output)
Damping factor	More than 40
Output terminal	Speaker terminal : A,B (4 - 16 ohms), A+B (8 - 16 ohms) Headphone terminal: More than 4 ohms
Speaker level control	B level is variable - 15 dB
Input sensitivity (impedance)	1.0 V (55 k ohms)

Preamplifier

Circuitry	Equalizer amp.: Differential 1-stage, 3-stage directly coupled Control amp.: NF type
Input sensitivity (Impedance)	PHONO 1,2 : 2 mV (50 k ohms) TUNER, AUX : 100 mV (50 k ohms) TAPE 1,2 : 100 mV (50 k ohms)
Phono overload level	PHONO 1,2 : 350 mV (at 1 kHz, T.H.D. 0.3%)
Output terminal (level/impedance)	TAPE 1,2 REC OUT : 100 mV / 1 k ohms
Frequency characteristics	PHONO : 30 – 15,000 Hz (RIAA ±0.2 dB) TUNER, AUX : 10 Hz – 50 kHz ($^{+0}_{-2}$ dB)
Tone control	BASS : ±8 dB (100 Hz) TREBLE : ±8 dB (10 kHz)
Filter	LOW : 20 Hz (12 dB/oct.) HIGH : 8 kHz (6 dB/oct.)
Loudness control (volume -30 dB)	+8 dB (100 Hz) +4.5 dB (10 kHz)
Signal-to-noise ratio (IHF, A network)	PHONO 1,2 : 75 dB TUNER, AUX, TAPE 1,2 : 90 dB
Gain selector	-5, -10, -20 dB (addition type)

Power supply, others

Semi-conductors	6 FETs, 44 Transistors, 43 Diodes
Power supply	~120 V / 220 V / 240 V 50 / 60 Hz
Power consumption	500 W (at rated output)
Dimensions	435 (W) x 166.5 (H) x 391 (D) mm (Measuring from front knob to rear.)
Weight	12.3 kg (27 .1 lbs.)

HA-5300

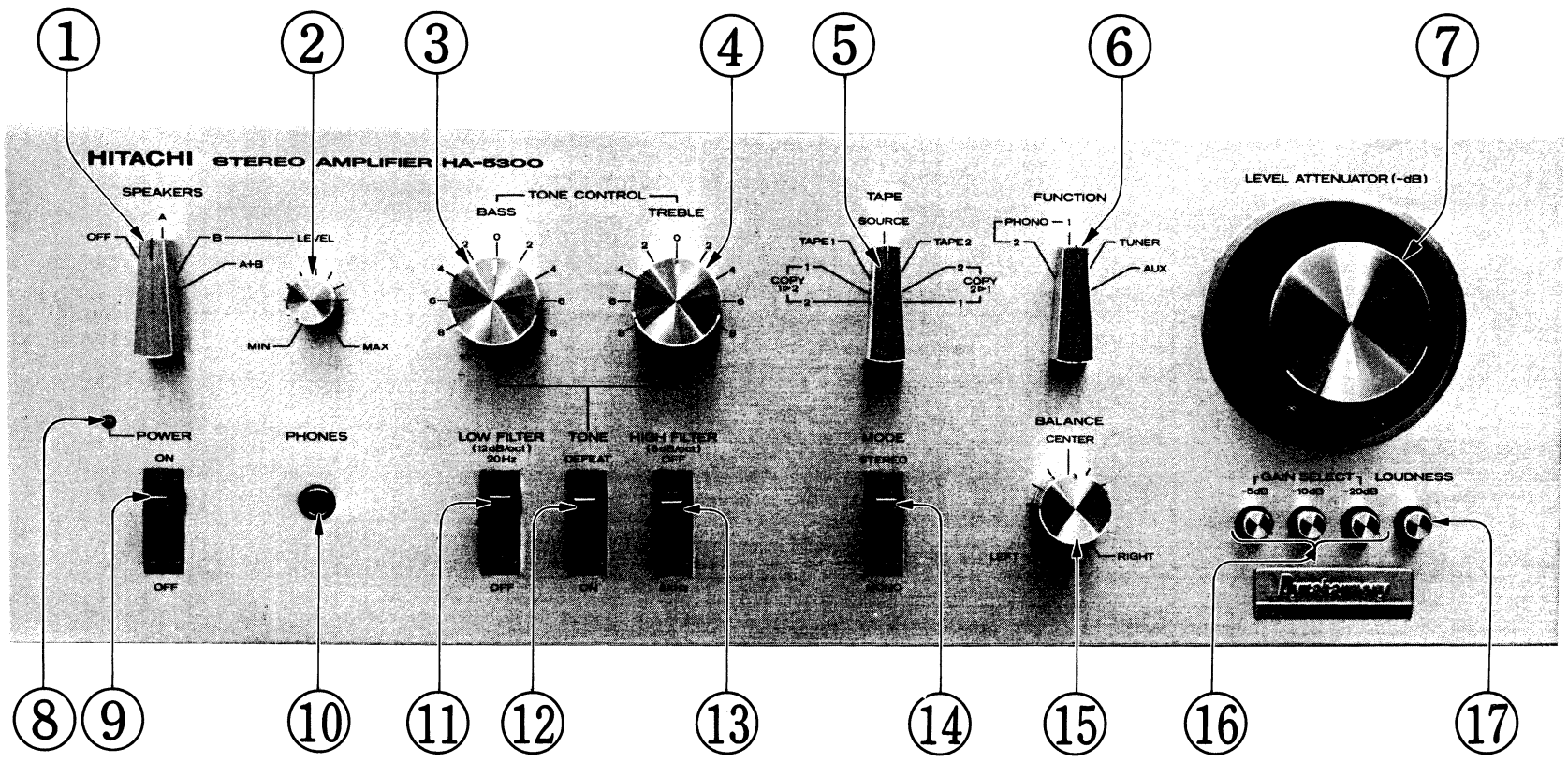
HITACHI

This set is available also with front panels in different colors.

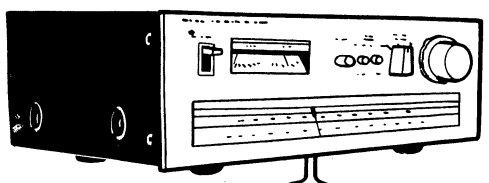
Dieses Gerät ist ebenfalls mit einer Frontseite in anderer Farbe erhältlich.

Cet appareil est également disponible avec un panneau frontal de couleur différente.

Denna enhet finns tillgänglig med frontpaneler i flera olika färger.



AM/FM STEREO TUNER
UKW/AM STEREO-TUNER
TUNER STEREO AM/FM
AM/FM STEREOMOTTAGARE



If you want to change-over the set voltage from 220V or 240V to 120V, the primary fuse must also be changed. Please contact the dealer from whom you purchased this unit or your nearest HITACHI service station.

Beim Umschalten der Spannungseinstellung von 220V oder 240V auf 120V muß auch die Hauptsicherung ausgewechselt werden. Überlassen Sie diese Arbeit bitte dem Fachhändler, von dem Sie das Gerät erworben haben, oder Ihrer nächsten HITACHI-Kundendienststelle.

Si l'on veut changer la tension de 220V ou 240V à 120V, il faut également changer le fusible primaire. Prendre contact avec le distributeur qui a vendu l'appareil ou avec la station service HITACHI la plus proche.

Skall enhetens nätspänning bytas från 220V eller 240V till 120V måste huvudsäkringen också bytas. Rådfråga stereohandeln där enheten köptes eller närmaste HITACHI serviceavdelning.

TURNTABLE
PLATTENSPIELER
TOURNE-DISQUE
SKIVSPELARE

TAPE DECK
TONBANDGERÄT
MAGNETOPHONE
BANDSPELARE

SPEAKER SYSTEM
LAUTSPRECHERGRUPPE
HAUT-PARLEURS
HÖGTALARE

HA-5300

HITACHI

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HITACHI SALES SCANDINAVIA AB
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